

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1                   1.       (Currently amended): A method of controlling a storage device  
2       controlling apparatus which includes:  
3                   a plurality of channel controllers having a circuit board on which are formed a file  
4       access processing section receiving requests to input and output data in files as units from an  
5       information processing apparatus via a network and an I/O processor outputting I/O requests  
6       corresponding to said requests to input and output data to a storage device, said file access  
7       processing section further translating a received file access request to a corresponding block  
8       access request; and  
9                   a disk controller executing input and output of data into and from said storage  
10      device in response to the I/O requests sent from said I/O processors, and  
11                  which manages a memory area provided by said storage device in logical  
12      volumes, which are memory areas logically set on the memory area, said method comprising the  
13      step of:  
14                  performing, by said disk controller, a replication management processing whereby  
15      data is also written into a second logical volume to store a copy of the data in the second logical  
16      volume, when said data is written into a first logical volume,  
17                  wherein at least one of the channel controllers or the disk controller is configured  
18      to selectively perform:  
19                         copying data from a source logical unit (LU) to a destination LU on an LU  
20      basis; and  
21                         copying data from the source LU to the destination LU on a file basis,  
22                         wherein copying on an LU basis includes copying data from the source  
23      LU to the destination LU based on difference data indicative of differences between data  
24      stored on the source LU and data stored on the destination LU,

25                   wherein copying on a file basis includes copying a subject file and  
26                   metadata associated with the subject file to the destination LU.

1                   2.       (Original): A method of controlling a storage device controlling apparatus  
2       according to claim 1 further comprising the steps of:  
3                   receiving, by each of at least one of said channel controllers, information  
4       specifying said to-be-copied data in files or directories as units, said information being sent from  
5       said information processing apparatus; and  
6                   identifying, by each said at least one channel controller, data of a file or directory  
7       specified by said information received and controlling such that the data is stored in said first  
8       logical volume.

1                   3.       (Original): A method of controlling a storage device controlling apparatus  
2       according to claim 1 further comprising the steps of:  
3                   receiving, by each of at least one of said channel controllers, first information  
4       specifying said to-be-copied data in files or directories as units, said first information being sent  
5       from said information processing apparatus;  
6                   identifying, by each said at least one channel controller, data of a file or directory  
7       specified by said first information received and controlling such that the data is stored in said  
8       first logical volume;  
9                   receiving, by each said at least one channel controller, second information  
10       instructing to stop said replication management processing, said second information being sent  
11       from said information processing apparatus;  
12                  notifying, by each said at least one channel controller, said disk controller of an  
13       effect when said second information is received;  
14                  stopping by said disk controller, when receiving said notifying, said replication  
15       management process; and  
16                  starting to write into a plurality of first logical volumes after said replication  
17       management processing stops if writing into said storage device data of a file or directory

18 specified by said first information causes writing into the plurality of first logical volumes, when  
19 said second information is received.

1                   4.       (Original): A method of controlling a storage device controlling apparatus  
2 according to claim 1, wherein the channel controllers include at least one enabled to  
3 communicate with the information processing apparatus through a LAN and at least one enabled  
4 to communicate with the information processing apparatus through a Fibre Channel.

1                   5.       (Original): A method of controlling a storage device controlling apparatus  
2 according to claim 4, wherein each of the channel controllers enabled to communicate with the  
3 information processing apparatus through a LAN is provided with its individual network address.

1                   6.       (Original): A method of controlling a storage device controlling apparatus  
2 according to claim 4, wherein each of the channel controllers enabled to communicate with the  
3 information processing apparatus through a LAN includes a NAS manager providing a setting  
4 Web page for setting the replication managing function.

1                   7.       (Currently amended): A method of controlling a storage device  
2 controlling apparatus which includes:  
3                   a plurality of channel controllers having a circuit board on which are formed a file  
4 access processing section receiving requests to input and output data in files as units from an  
5 information processing apparatus via a network and an I/O processor outputting I/O requests  
6 corresponding to said requests to input and output data to a storage device, said file access  
7 processing section further translating a received file access request to a corresponding block  
8 access request; and  
9                   a disk controller executing input and output of data into and from said storage  
10 device in response to the I/O requests sent from said I/O processors, and  
11                   which manages a memory area provided by said storage device in logical  
12 volumes, which are memory areas logically set on the memory area, said method comprising the  
13 step of:

performing, by said disk controller, a processing whereby data is sent to another storage device controlling apparatus to store a copy of the data also in a second logical volume provided by said another storage device controlling apparatus, when said data is written into a first logical volume,

wherein at least one of the channel controllers or the disk controller is configured to selectively perform:

copying data from a source logical unit (LU) to a destination LU on an LU basis; and

copying data from the source LU to the destination LU on a file basis, wherein copying on an LU basis includes copying data from the source LU to the destination LU based on difference data indicative of differences between data stored on the source LU and data stored on the destination LU,

wherein copying on a file basis includes copying a subject file and metadata associated with the subject file to the destination LU.

8. (Original): A method of controlling a storage device controlling apparatus according to claim 7 further comprising the steps of:

receiving, by each of at least one of said channel controllers, information specifying said to-be-copied data in files or directories as units, said information being sent from said information processing apparatus; and

identifying, by each said at least one channel controller, data of a file or directory specified by said first information received and controlling such that the data is stored in said first logical volume.

9. (Original): A method of controlling a storage device controlling apparatus according to claim 7, wherein the channel controllers include at least one enabled to communicate with the information processing apparatus through a LAN and at least one enabled to communicate with the information processing apparatus through a Fibre Channel.

10. (Original): A method of controlling a storage device controlling apparatus according to claim 9, wherein each of the channel controllers enabled to communicate with the information processing apparatus through a LAN is provided with its individual network address.

11. (Currently amended): A storage device controlling apparatus which includes:  
a plurality of channel controllers having a circuit board on which are formed a file access processing section receiving requests to input and output data in files as units from an information processing apparatus via a network and an I/O processor outputting I/O requests corresponding to said requests to input and output data to a storage device, said file access processing section further translating a received file access request to a corresponding block access request; and  
a disk controller executing input and output of data into and from said storage device in response to the I/O requests sent from said I/O processors, and  
which manages a memory area provided by said storage device in logical volumes, which are memory areas logically set on the memory area,  
~~said controlling apparatus wherein~~ said disk controller comprises a section which performs a replication management processing whereby data is also written into a second logical volume to store a copy of the data in the second logical volume, when said data is written into a first logical volume,  
wherein at least one of the channel controllers or the disk controller is configured to selectively perform:  
copying data from a source logical unit (LU) to a destination LU on an LU basis; and  
copying data from the source LU to the destination LU on a file basis,  
wherein copying on an LU basis includes copying data from the source LU to the destination LU based on difference data indicative of differences between data stored on the source LU and data stored on the destination LU,

25                   wherein copying on a file basis includes copying a subject file and metadata  
26                   associated with the subject file to the destination LU.

1                   12.     (Original): A storage device controlling apparatus according to claim 11,  
2                   wherein each of at least one of said channel controllers comprises a section which receives  
3                   information specifying said to-be-copied data in files or directories as units, said information  
4                   being sent from said information processing apparatus; and  
5                   wherein each said at least one channel controller further comprises a section  
6                   which receives said information, identifies data of a file or directory specified by said  
7                   information, and controls such that the data is stored in said first logical volume.

1                   13.     (Original): A storage device controlling apparatus according to claim 11,  
2                   wherein each of at least one of said channel controllers comprises a section which receives first  
3                   information specifying said to-be-copied data in files or directories as units, said first information  
4                   being sent from said information processing apparatus; a section which identifies data of a file or  
5                   directory specified by said first information received and controls such that the data is stored in  
6                   said first logical volume; a section which receives second information instructing to stop said  
7                   replication management processing, said second information being sent from said information  
8                   processing apparatus; and a section which notifies said disk controller of an effect when said  
9                   second information is received;

10                   wherein said disk controller further comprises a section which stops said  
11                   replication management processing when said notice is received; and

12                   wherein each said at least one channel controller further comprises a section  
13                   which starts to write into a plurality of first logical volumes after said replication management  
14                   processing stops if writing into said storage device data of a file or directory specified by said  
15                   first information causes writing into the plurality of first logical volumes, when said second  
16                   information is received.

1                   14.   (Original): A storage device controlling apparatus according to claim 11,  
2 wherein the channel controllers include at least one enabled to communicate with the  
3 information processing apparatus through a LAN and at least one enabled to communicate with  
4 the information processing apparatus through a Fibre Channel.

1                   15.   (Original): A method of controlling a storage device controlling apparatus  
2 according to claim 14, wherein each of the channel controllers enabled to communicate with the  
3 information processing apparatus through a LAN is provided with its individual network address.

1                   16.   (Original): A storage device controlling apparatus according to claim 14,  
2 wherein each of the channel controllers enabled to communicate with the information processing  
3 apparatus through a LAN includes a NAS manager providing a setting Web page for setting the  
4 replication managing function.

1                   17.   (Currently amended): A storage device controlling apparatus which  
2 includes:  
3                   a plurality of channel controllers having a circuit board on which are formed a file  
4 access processing section receiving requests to input and output data in files as units from an  
5 information processing apparatus via a network and an I/O processor outputting I/O requests  
6 corresponding to said requests to input and output data to a storage device, said file access  
7 processing section further translating a received file access request to a corresponding block  
8 access request; and

9                   a disk controller executing input and output of data into and from said storage  
10 device in response to the I/O requests sent from said I/O processors, and

11                   which manages a memory area provided by said storage device in logical  
12 volumes, which are memory areas logically set on the memory area,

13                   ~~said controlling apparatus wherein~~ said disk controller comprises a section which  
14 performs a processing whereby data is sent to another storage device controlling apparatus to

store a copy of the data also in a second logical volume provided by said another storage device  
controlling apparatus, when said data is written into a first logical volume,

wherein at least one of the channel controllers or the disk controller is configured  
to selectively perform:

copying data from a source logical unit (LU) to a destination LU on an LU  
basis; and

copying data from the source LU to the destination LU on a file basis,  
wherein copying on an LU basis includes copying data from the source  
LU to the destination LU based on difference data indicative of differences between data  
stored on the source LU and data stored on the destination LU,

wherein copying on a file basis includes copying a subject file and metadata  
associated with the subject file to the destination LU.

18. (Original): A storage device controlling apparatus according to claim 17  
wherein each of at least one of said channel controllers comprises a section which receives  
information specifying said to-be-copied data in files or directories as units, said information  
being sent from said information processing apparatus; and a section which identifies data of a  
file or directory specified by said information received and controls such that the data is stored in  
said first logical volume.

19. (Original): A storage device controlling apparatus according to claim 17,  
wherein the channel controllers include at least one enabled to communicate with the  
information processing apparatus through a LAN and at least one enabled to communicate with  
the information processing apparatus through a Fibre Channel.

20. (Original): A method of controlling a storage device controlling apparatus  
according to claim 19, wherein each of the channel controllers enabled to communicate with the  
information processing apparatus through a LAN is provided with its individual network address.